1 Summary

For many years it was assumed that dental materials have almost no side effects except for very rare cases of allergic reactions. Adverse effects of dental materials are considered to be rare and exceptional. Low incidence of these reactions results from their high corrosion resistance and low toxicity.

However, modern dental materials allowed a replacement of former metal dental materials, and thus allow a more detailed investigation of potential harmful effects. Due to the low incidence of adverse effects dental practitioners are not adequately experienced in this area, which results in underestimation or overestimation of potential risks. It is believed that dental materials do not cause systemic reactions and generalized manifestations are considered to be unique. Clinical manifestations of intolerance to dental materials are usually local. Reaction to dental material in direct contact with oral mucosa is considered to be the most common etiological factor of oral lichenoid reactions. It is usually caused by dental amalgam, less often by alloys containing nickel, gold, chromium, and palladium.

Aim

The aim of the study is to assess the relationship between white lesions of the oral mucosa (lichenoid lesions, leukoplakia, etc.) and potential irritation by dental materials. The long-term effect of dental materials replacement was evaluated.

Patients and Methods

In the period of 2009–2012, 484 patients were examined (out of which 79% were women and 21% were men, aged 21–85 years), who were referred to the Institute of Clinical and Experimental Dentistry, 1st Faculty of Medicine and General University Hospital for a suspected intolerance to dental materials. The study sample was recruited from the patients with clinical manifestations of white oral mucosal lesions. The observation period was at least 1 year. The selected sample of 75 patients consisted of 63 women (84%) and 12 men (16%) with a mean age of 57.7 years. Medical history of the patients was recorded and they underwent a clinical examination of the oral cavity, measuring of galvanic cell, patch tests and test LTT-MELISA®. Based on the results of the above investigations, the replacement of dental materials was recommended. Subsequent changes of the health status of the study

subjects were recorded objectively using photographic documentation and subjectively by patient interviews.

Results

White oral mucosal lesions were observed, in descending order of frequency, on the cheeks (89%), tongue (63%), gingiva (25%) and palate (8%). Mucosal lesions were in most cases unilateral or asymmetrical and diffuse (56%). Direct contact between the dental materials and mucosal lesions was observed in 52 patients (69%). In 33 patients the mucosal lesions were strictly restricted to the direct contact with the dental material and in 19 patients the lesions extended beyond this area. The mean follow-up period was 34 months. Nine patients were excluded from the follow-up.

The group of 66 patients underwent replacement of dental materials, which were changed totally or partially in 47% or 26% of patients respectively. The remaining 27% patients were not treated due to the inaccessibility of financially demanding treatment or no-confidence in proposed therapy. In the treated group, clinical improvement of oral symptoms was observed in 87.5% and no worsening was observed. In the untreated group, clinical improvement was observed in 16.7% and in two patients worsened clinical symptoms, namely development of the squamous cell carcinoma at the affected oral area were observed.

Conclusion

The replacement of the dental materials led to clinical improvements in almost 90% of the patients ($p<0.001$). The occurrence of galvanic cells in the oral cavity of the study subjects was significantly higher compared to the general population ($p<0.001$). The relationship between observed malignancies and irritation by some dental materials could not be excluded and needs to be confirmed by future clinical trials.

Key words

Oral lichenoid reaction, white lesions of the oral mucosa, dental material's intolerance, galvanic cell, patch tests, LTT-MELISA® test